查询RF3100-3K供应商

RF3100-3K

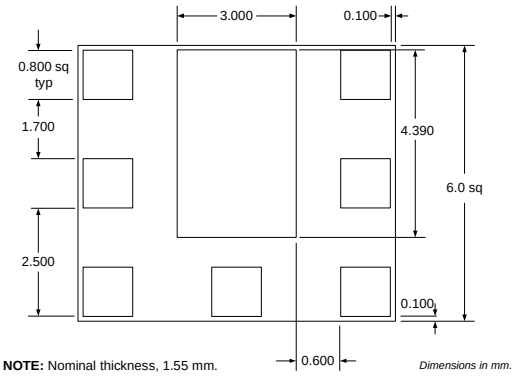
3V 1700MHZ LINEAR AMPLIFIER MODULE

Typical Applications

- 3V CDMA Korean-PCS Handsets
- Spread-Spectrum Systems
- Designed for Compatibility with Qualcomm Chipsets

Product Description

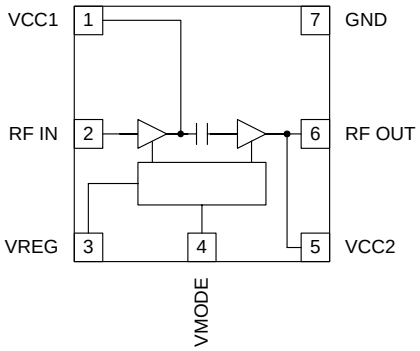
The RF3100-3K is a high-power, high-efficiency linear amplifier IC targeting 3V hand-held systems. The device is manufactured on an advanced Gallium Arsenide Heterojunction Bipolar Transistor (HBT) process, and has been designed for use as the final RF amplifier in dual-mode 3V CDMA hand-held digital cellular equipment, spread-spectrum systems, and other applications in the 1750MHz to 1780MHz band. The RF3100-3K has a digital control line for low power application to reduce the current drain. The device is self-contained with 50Ω input and output that is matched to obtain optimum power, efficiency, and linearity characteristics. The module is an ultra-small 6mmx6mm land grid array with backside ground.



Package Style: LGM (6mmx6mm)

Optimum Technology Matching® Applied

- ☐ Si BJT
- ☑ GaAs HBT
- ☐ GaAs MESFET
- ☐ Si Bi-CMOS
- ☐ SiGe HBT
- ☐ Si CMOS



Functional Block Diagram

Features

- Input/Output Internally Matched@50Ω
- Single 3V Supply
- 28dBm Linear Output Power
- -141dBm/Hz Noise Power
- 35% Linear Efficiency
- 45mA Idle Current (Low Power Mode)

Ordering Information

RF3100-3K 3V 1700MHz Linear Amplifier Module
RF3100-3K PCBA Fully Assembled Evaluation Board

RF Micro Devices, Inc.
7628 Thorndike Road
Greensboro, NC 27409, USA
Tel (336) 664 1233
Fax (336) 664 0454
http://www.rfmd.com

Absolute Maximum Ratings

Parameter	Rating	Unit
Supply Voltage (RF off)	+8.0	V_{DC}
Supply Voltage (P_{OUT}≤29dBm)	+5.2	V_{DC}
Control Voltage (V_{REG})	+4.2	V_{DC}
Mode Voltage (V_{MODE})	+3.5	V_{DC}
Input RF Power	+10	dBm
Operating Case Temperature	-30 to +110	℃
Storage Temperature	-30 to +150	℃

Caution! ESD sensitive device.

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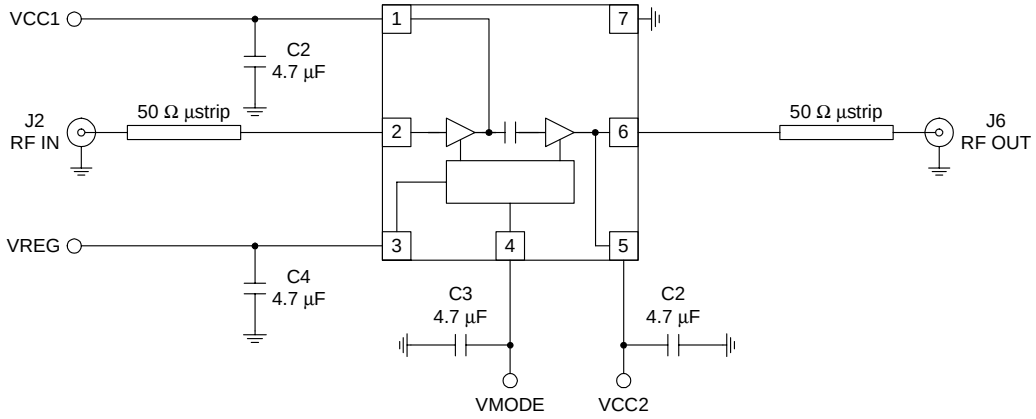
Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
High Power State (V_{MODE} Low)					Typical Performance at V_{CC}=3.2V, V_{REG}=2.85V, T_{AMB}=25°C, Frequency=1750MHz to 1780MHz (unless otherwise specified)
Frequency Range	1750		1780	MHz	
Linear Gain	25.5	27.5		dB	
Second Harmonic		-49		dBc	
Third Harmonic		-52		dBc	
Maximum Linear Output Power (CDMA Modulation)	28			dBm	
Total Linear Efficiency		35		%	P_{OUT}=28dBm
Adjacent Channel Power Rejection		-46	-44.5	dBc	ACPR@1.25MHz, P_{OUT}=28dBm
		-60	-57.5	dBc	ACPR@2.25MHz, P_{OUT}=28dBm
Input VSWR		<2:1			
Output VSWR			10:1		No damage.
			6:1		No oscillations. >-70dBc
Noise Power		-141		dBm/Hz	At 90MHz offset.
Low Power State (V_{MODE} High)					Typical Performance at V_{CC}=3.2V, V_{REG}=2.85V, T_{AMB}=25°C, Frequency=1750MHz to 1780MHz (unless otherwise specified)
Frequency Range	1750		1780	MHz	
Linear Gain	17	20		dB	
Second Harmonic		-49		dBc	
Third Harmonic		-52		dBc	
Maximum Linear Output Power (CDMA Modulation)	16			dBm	
Adjacent Channel Power Rejection		-52	-46.5	dBc	ACPR@1.25MHz
		-66	-61	dBc	ACPR@2.25MHz
Input VSWR		<2:1			
Output VSWR			10:1		No damage.
			6:1		No oscillations. >-70dBc

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
DC Supply					T_{AMB}=25°C
Supply Voltage	3.2	3.7	4.2	V	
Quiescent Current		170	240	mA	V_{MODE}=Low, V_{REG}=2.85V
		50	80	mA	V_{MODE}=High, V_{REG}=2.85V
V_{REG} Current		6	10	mA	
V_{MODE} Current			1.5	mA	
Turn On/Off Time			6	µs	
Total Current (Power Down)		5	10	µA	V_{REG}=Low, V_{MODE}=Low
V_{REG} “Low” Voltage	0		0.5	V	
V_{REG} “High” Voltage	2.8	2.85	2.9	V	
V_{MODE} “Low” Voltage	0		0.5	V	
V_{MODE} “High” Voltage	2.0		3.0	V	

Pin	Function	Description	Interface Schematic
1	VCC1	First stage collector supply. A low frequency decoupling capacitor (e.g., 1μF) is required.	
2	RF IN	RF input internally matched to 50Ω. This input is internally AC-coupled.	
3	VREG	Regulated voltage supply for amplifier bias. In Power Down mode, both V_{REG} and V_{MODE} need to be LOW (<0.5V).	
4	VMODE	For nominal operation (High Power Mode), V_{MODE} is set LOW. When set HIGH, devices are turned off to improve efficiency.	
5	VCC2	Output stage collector supply. A low frequency decoupling capacitor (e.g., 1μF) is required.	
6	RF OUT	RF output internally matched to 50Ω. This output is internally AC-coupled.	
7	GND	Ground connection. Connect to package base ground. For best performance, keep traces physically short and connect immediately to ground plane.	
Pkg Base	GND	Ground connection. The backside of the package should be soldered to a top side ground pad which is connected to the ground plane with multiple vias. The pad should have a short thermal path to the ground plane.	

Evaluation Board Schematic

(Download Bill of Materials from www.rfmd.com.)



Evaluation Board Layout
Board Size 1.5” x 1.5”

Board Thickness 0.032”, Board Material FR-4, Multi-Layer, Ground Plane at 0.014”